



Air Quality Permitting Statement of Basis

February 3, 2006

Tier I Operating Permit No. T1-030034

**Williams Gas Pipeline, Northwest Pipeline Corporation
Caldwell Compressor Station**

Facility ID No. 045-00004

Prepared by:

**Bill Rogers
Permit Coordinator**

FINAL

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Acronyms, Units, and Chemical Nomenclature

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
Bbl	barrel
Btu	British thermal unit
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
HAPs	hazardous air pollutants
hp	horsepower
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
MMBtu	million British thermal units
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
SIC	Standard Industrial Classification
SO ₂	sulfur dioxide
T/yr	tons per year
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose of this memorandum is to explain the legal and factual basis for this draft Tier I operating permit in accordance with IDAPA 58.01.01.362.

The Department of Environmental Quality (DEQ) has reviewed the information provided by Northwest Pipeline (NWP) regarding the operation of the Compressor Station located near Caldwell. This information was submitted based on the requirements to submit a Tier I operating permit application in accordance with IDAPA 58.01.01.313.

2. FACILITY DESCRIPTION

The Caldwell Compressor Station operates remotely from NWP's headquarters, located in Salt Lake City, and is used to transmit natural gas along NWP's natural gas transmission pipeline. The station is operated to meet the demand of the pipeline system rather than a fixed schedule. The arrangement of pipes and valves in the Caldwell pipe yard allows natural gas to be transmitted in either direction.

Natural gas entering the station passes through an in-line filter that removes any impurities from the gas stream. The natural gas is compressed through the compressor and is returned to the transmission pipeline. Fuel for the reciprocating engines and other natural gas combustion equipment enters the station in a separate pipeline that originates in the pipe yard downstream of the filter. Fuel gas is lowered from the pipeline pressures to pressures appropriate for the reciprocating engines in the fuel meter building. From the fuel meter building, natural gas is transported to the reciprocating engines, the boiler, the space heaters, and the backup generator. The reciprocating engines, boiler, and backup generator have their own exhaust stacks.

Lubricating oil is stored in a storage tank from which it flows by gravity on demand to a storage tank in the compressor building. When the engine is running, lubricating oil circulates through the engine. The hydraulic oil is pumped to a fan-assisted cooler located inside the compressor building. Oil that may leak from the hydraulic oil system is captured by a drainage system and conveyed to a sump. From the sump, the used oil is pumped to the used-oil tank where it is sent for recycling.

3. FACILITY/AREA CLASSIFICATION

This facility is a major facility as defined by IDAPA 58.01.01.008.10 because it emits or has the potential to emit a regulated criteria air pollutant in amounts greater than or equal to 100 tons per year, and because the facility emits or has the potential to emit a single hazardous air pollutant in amounts greater than or equal to 10 tons per year.

This facility is not a designated facility as defined by IDAPA 58.01.01.006.27.

This facility is a major facility as defined by IDAPA 58.01.01.205 because it emits or has the potential to emit a regulated criteria air pollutant in amounts greater than or equal to 250 tons per year.

The Standard Industrial Classification (SIC) defining the facility is 4922, and the Aerometric Information Retrieval System (AIRS) facility classification is A.

The facility is located in Gem County just outside of Caldwell, Idaho, which is classified as unclassifiable for all criteria pollutants (SO₂, NO_x, CO, PM₁₀, ozone, and lead). There are no Class I areas within 10 kilometers (km) of the facility. The Caldwell facility is located in Air Quality Control Region (AQCR) 64 and universal transverse mercator (UTM) Zone 11.

4. APPLICATION SCOPE

On June 25, 2003, DEQ received a Tier I operating permit renewal application from NWP for the operation of its Caldwell natural gas compressor station.

4.1 Requested Permit Changes

NWP has requested to change the existing Permit Condition 4.5 so that NO_x source testing is required biennially (once every two years). The initial source test is to be conducted within 180 days of issuance of the renewed Tier I operating permit.

NWP has requested to remove the monthly calculation of NO_x based on the formula provided in Appendix A of the March 6, 2003 permit. The formula calculated annual emissions as the product of a one-time stack test value (0.687 lb/MMBtu), the highest hourly fuel flow (MMft³/hr) and the generic heat value for natural gas (1,050 Btu/scf). Northwest proposes to use the most recent source test to calculate emissions. The change will show more accurate emission estimates since the calculation is based on most recent engine performance criteria and measured fuel flow.

NWP has requested to remove particulate emission testing requirements for the four reciprocating engines. The testing requirements were removed because the station internal combustion engines are not subject to IDAPA 58.01.01.675 (Fuel Burning Equipment – Particulate Matter).

The permit changes that have been requested by NWP are discussed in more detail in the Regulatory Analysis section of this memorandum.

5. SUMMARY OF EVENTS

June 25, 2003	DEQ receives a Tier I operating permit renewal application
August 6, 2003	DEQ determines the application administratively complete
November 22, 2005	DEQ provides draft permit to facility and to DEQ's Boise Regional Office for review
December 12, 2005	DEQ issues public comment draft permit
December 23, 2005	
Through January 23, 2006	Public comment period. No comments received.
January 24, 2006	DEQ provides proposed permit to EPA for its review via e-mail (expedited review)
January 31, 2006	EPA provides notification that proposed permit is eligible for final issuance
February 16, 2006	DEQ renews the facility's Tier I operating permit through the issuance of final Tier I Operating Permit No. T1-030034

5.1 Permitting History

September 9, 1996	A PTC was issued for installation of a turbo charger on an existing engine.
November 22, 1996	The PTC was amended to more accurately reflect actual facility operations.
January 4, 2001	The facility was issued Tier 1 Operating Permit No. 045-00004.

March 6, 2003	The Tier I Operating Permit was amended to change name of responsible official.
May 13, 2004	NWP requests permit amendments be incorporated into the permit renewal process.
May 27, 2004	NWP requests to change the name of the responsible official.

6. PERMIT ANALYSIS

6.1 Basis of Analysis

The following documents were relied upon in preparing this memorandum and the Tier I operating permit:

- PTC No. 0020-0094, issued June 17, 1991
- Tier I operating permit No. 045-00004, issued March 6, 2003
- NWP Tier I permit renewal application received on June 25, 2003
- Compliance certification received on January 12, 2004
- Compliance assurance proposal received on January 23, 2004
- Guidance developed by the U.S. Environmental Protection Agency (EPA) and DEQ

6.2 Emissions Description

The primary emissions from the Caldwell Compressor Station are from the combustion of natural gas in four reciprocating engines which drive compressors. Natural gas is also combusted in a space heater and a backup generator which are both classified as insignificant activities. Nitrogen oxides and volatile organic compounds potential to emit are above the 100 ton per year major facility threshold and the potential to emit formaldehyde is above the 10 ton per year hazardous air pollutant threshold. Table 1 gives a summary of the four reciprocating engines criteria air pollutants potential to emit. The values in Table 1 are the emissions estimates the applicant submitted in the Tier I operating permit renewal application received June 25, 2003. Appendix A contains a summary of the four reciprocating engines HAPs potential to emit.

Table 6.1 CRITERIA AIR POLLUTANT POTENTIAL TO EMIT

Source	PM ₁₀ ^a (Tons per year)	CO ^b (Tons per year)	NO _x ^c (Tons per year)	SO ₂ ^d (Tons per year)	VOC ^e (Tons per year)	Formaldehyde (Tons per year)
Unit 1: Cooper Bessemer GMWA-6 compressor engine.	0.49	14	280	0.28	42	2.80
Unit 2: Cooper Bessemer GMWA-6 compressor engine.	0.49	14	280	0.28	42	2.80
Unit 3: Cooper Bessemer GMWA-6 compressor engine.	0.49	14	280	0.28	42	2.80
Unit 4: Cooper Bessemer GMVH-8 compressor engine.	0.68	38	141	0.39	24.17	4.03
Total	2.2	80.2	980.4	1.2	150.1	12.4

^{a)} Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

^{b)} Carbon monoxide

^{c)} Nitrogen oxides

^{d)} Sulfur dioxide

^{e)} Volatile organic compounds

7. REGULATORY ANALYSIS

7.1 IDAPA 58.01.01.313.03 – Renewals of Tier I Operating Permits

This rule provides the regulatory time upon which the owner or operator of a Tier I source is required to submit a complete Tier I operating permit application.

7.2 New Source Performance Standards (NSPS) – 40 CFR 60

No emissions unit at this facility is subject to federal NSPS requirements.

7.3 National Emission Standards for Hazardous Air Pollutants (NESHAPS) – 40 CFR Parts 61 & 63

The facility is a major source of hazardous air pollutants because the facility has the potential to emit formaldehyde at greater than 10 tons per year. The preconstruction requirements for major sources of hazardous air pollutants of 40 CFR 63.40 do not apply to this facility because construction of all emissions units commenced prior to June 29, 1998.

None of the emissions units at the facility are defined as affected emission units for any source specific maximum achievable control technology (MACT) standard listed in either 40 CFR 61 or 40 CFR 63.

8. REGULATORY ANALYSIS – EMISSIONS UNITS

Units 1,2, and 3 Cooper-Bessemer GMWA-6 Reciprocating Engines

8.1 Emission Unit Description

Natural gas compressors are powered by Cooper-Bessemer reciprocating engines. The engines are sources of PM₁₀, SO₂, CO, NO_x, VOCs, and some HAPs. Units 1 through 3 compressors are each powered by Model GMWA-6 engines, each of which are rated at a maximum 1,450 hp at station conditions. Units 1 through 3 were installed when the station was constructed in 1956.

8.2 Permit Requirement 3.1

Permit requirement 3.1 establishes a visible emissions limit of 20% opacity.

8.3 Compliance Assurance

Permit Condition 3.2 requires that only pipeline quality natural gas be fired in the compressor engines. Visible emissions from combusting pipeline quality natural gas are not expected to approach 20% opacity. Limiting the fuel that is burned to natural gas assures compliance.

Removed Permit Conditions

Three permit conditions were removed from the March 6, 2003 Tier I operating permit that were for the three Cooper-Bessemer GMWA-6 reciprocating engines (Unit 1, 2, and 3). Permit Conditions 2.1, 2.2, and 2.5 from the March 6, 2003 operating permit are not included in the renewed permit.

Permit Condition 2.1 of the March 6, 2003 permit incorporated the fuel burning equipment standard of IDAPA 58.01.01.675. It has been determined that the internal combustion reciprocating engines are not fuel burning equipment because the primary purpose of the engines is not to produce heat or power by indirect heat transfer.

Permit Condition 2.2 of the March 6, 2003 permit required fuel monitoring when there are no applicable requirements that pertain to the amount of fuel burned in Units 1, 2, and 3. Consequently, this requirement has been deleted and not included in the renewed permit.

Permit Condition 2.5 of the March 6, 2003 permit was not included in the renewed permit because it required a performance test to determine compliance with the fuel burning equipment emissions limitation. These internal combustion engines are not subject to IDAPA 58.01.01.675.

None of the permit conditions that were removed from the March 6, 2003 permit are applicable requirements as defined by IDAPA 58.01.01.008.03.

Cooper-Bessemer GMVH-8 Reciprocating Engine

8.4 Emission Unit Description

Unit 4 consists of a Cooper GMVH-8 reciprocating engine and compressor. The engine was installed in 1981 when the station was upgraded, and it is rated at a maximum of 2,088 hp at station conditions. The engine had clean burn technology installed in 1996, which resulted in emissions reductions for NO_x and VOC, and an increase in CO emissions.

8.5 Permit Requirement 4.1

Permit Condition 4.1 establishes NO_x emission limits at 32.2 pounds per hour and 141 tons per year. The 32.2 lb/hr emission standard was calculated from the manufacturer's emission data of 7g/hp*hr. This is an applicable requirement that is from a permit to construct issued to the facility on November 22, 1996.

8.6 Compliance Assurance

Permit Conditions 4.3, 4.4, 4.5, and 4.6 assure compliance with the NO_x emission limits.

Permit Condition 4.3 requires that the facility combust only pipeline quality natural gas in the GMVH-8 reciprocating engine. This permit condition was developed under the authority of IDAPA 58.01.01.322.01, which gives DEQ the authority to establish operational requirements to assure compliance with an applicable requirement.

Permit Condition 4.5 requires the permittee to conduct biennial performance tests to determine NO_x emissions. This permit condition was developed under the authority of IDAPA 58.01.01.322.09 which gives DEQ the authority to establish sufficient testing requirements to assure compliance with an applicable requirement. The initial test is required within 180 days of issuance of the renewed Tier I operating permit.

Permit Condition 4.6 requires the permittee to conduct the performance tests according to DEQ approved methods and to submit written reports on the performance test results to DEQ within 45 days of the performance tests. The 45-day time frame to submit the test results has been changed to 30 days as is required by IDAPA 58.01.01.157.04.

8.7 Permit Requirement 4.2

Permit requirement 4.2 establishes a visible emissions limit of 20% opacity.

8.8 Compliance Assurance

Permit Condition 4.3 requires that only pipeline quality natural gas be fired in the compressor engine. Visible emissions from combusting natural gas are not expected to approach 20% opacity. Limiting the fuel that is burned to natural gas assures compliance.

9. **INSIGNIFICANT ACTIVITIES**

There are several insignificant sources at the Caldwell Compressor Station, described in the permit application. These emission units qualify as insignificant due to the quantity of emissions or to the source being specifically listed in IDAPA 58.01.01.317.01(a/b). Emission units that are listed as insignificant under IDAPA 317.01(b) are listed in the Tier I Operating Permit in order to be covered by the permit shield, defined in IDAPA 58.01.01.325.01. While there are no monitoring requirements for insignificant emissions units at this facility, these units must comply with all applicable federal, state, and local requirements.

Table 9.1 INSIGNIFICANT ACTIVITIES DESCRIBED BY THE SOURCE

Description	Insignificant Activities Section Citation IDAPA 58.01.01.317.01
Boiler, 3.6. MMBtu/hr Natural Gas Fired	b.i.5
Emergency Generator, 475 hp Natural Gas Fired	b.i.5
Five space heaters @ $\leq 60,000$ Btu/hour Natural Gas Fired	b.i.18
Natural Gas Pipeline and Fuel System	b.i.30
Lubricating Oil System, one 70 bbl and one 100 bbl used oil holding tanks, and a 277 bbl clean oil tank	a.i.4

Emissions from the lubricating oil system are small amounts of VOC. Emissions from the natural gas pipeline and fuel system are VOC and some HAPs and TAPs. These emissions result from leaking valves, flanges, pressure relief valves, and an annual testing of the emergency shutdown system that includes a facility-wide blowdown. Emissions generated from all other insignificant emissions sources are products of natural gas combustion, which include PM₁₀, SO₂, CO, NO_x, VOCs, and some HAPs and TAPs.

10. **ALTERNATIVE OPERATING SCENARIOS**

The facility did not request any alternative operating scenarios.

11. **TRADING SCENARIOS**

The facility did not request any trading scenarios.

12. **COMPLIANCE SCHEDULE**

12.1 Compliance Plan

NWP, Caldwell has certified compliance with all applicable requirements. No compliance plan was submitted.

12.2 Compliance Certification

NWP, Caldwell is required to periodically certify compliance in accordance with General Provision 21. The facility shall submit an annual compliance certification for each emissions unit to DEQ and EPA, in accordance with IDAPA 58.01.01.314.10. The compliance certification report shall address compliance of each emissions unit to the terms and conditions of this permit, including fuel usage, visible emission standard, and fugitive emissions.

13. PERMIT REVIEW

13.1 *Regional Review of Draft Permit*

DEQ provided the draft permit to its Boise Regional Office on November 22, 2005. Comments were received December 29, 2005 and have been incorporated into the permit.

13.2 *Facility Review of Draft Permit*

DEQ provided the draft permit to NWP for its review on November 22, 2005. On December 5, 2005, NWP responded in writing stating that it had no comments on the draft.

13.3 *Public Comment*

DEQ provided the draft permit for public comment on December 12, 2005. The public comment period ran from December 23, 2005, through January 23, 2006. No comments were submitted in response to DEQ's draft permit.

14. ACID RAIN PERMIT

NWP, Caldwell is not subject to the Acid Rain permitting requirements of 40 CFR 72 through 75. The facility is not an affected unit according to the definitions and applicability under 72.2 and 72.6.

15. REGISTRATION FEES

This facility is a major facility as defined by IDAPA 58.01.01.008.10; therefore, registration and registration fees in accordance with IDAPA 58.01.01.387 apply. The facility is in compliance with registration and registration fee requirements.

16. AIRS DATA BASE

Appendix B contains the completed AIRS data base forms.

17. RECOMMENDATION

Based on the Tier I application and review of state rules and federal regulation, staff recommends that DEQ issue final Tier I Operating Permit No. T1-030034 to Northwest Pipeline Corporation for its Caldwell natural gas compressor station. This permit is the renewal of the facility's Tier I operating permit. The permit was made available for public comment as required by IDAPA 58.01.01.364. The project does not involve PSD permitting requirements.

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Appendix A

Williams Gas Pipeline, Northwest Pipeline Corp.
Caldwell Compressor Station

Criteria and Hazardous Air Pollutant Potential to Emit for Reciprocating Engines

5/2/2004

Northwest Pipeline Caldwell Station PTE: 8760 hr/yr; Unit 4 Clean burn technology.

Pollutants	E1		E2		E3		E4		STATION TOTAL		Pollutants
	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	(lb/hr)	(T/yr)	
PM ₁₀	0.11	0.49	0.11	0.49	0.11	0.49	0.16	0.68	0.49	2.16	PM ₁₀
SO ₂	0.06	0.28	0.06	0.28	0.06	0.28	0.09	0.39	0.28	1.24	SO ₂
CO	3.19	13.99	3.19	13.99	3.19	13.99	8.74	38.27	18.32	80.24	CO
NO _x	63.88	279.78	63.88	279.78	63.88	279.78	32.19	141.01	223.82	980.35	NO _x
VOC	9.58	41.97	9.58	41.97	9.58	41.97	5.52	24.17	34.26	150.07	VOC
Benzene	1.50E-02	6.57E-02	1.50E-02	6.57E-02	1.50E-02	6.57E-02	2.07E-02	9.08E-02	6.58E-02	0.29	Benzene
Formaldehyde	6.39E-01	2.80E+00	6.39E-01	2.80E+00	6.39E-01	2.80E+00	9.20E-01	4.03E+00	2.84E+00	12.42	Formaldehyde
Toluene	1.50E-02	6.57E-02	1.50E-02	6.57E-02	1.50E-02	6.57E-02	2.07E-02	9.08E-02	6.58E-02	0.29	Toluene
Xylenes	2.25E-02	9.86E-02	2.25E-02	9.86E-02	2.25E-02	9.86E-02	3.11E-02	1.36E-01	9.86E-02	0.43	Xylenes
Ethylbenzene	7.51E-03	3.29E-02	7.51E-03	3.29E-02	7.51E-03	3.29E-02	1.04E-02	4.54E-02	3.29E-02	0.14	Ethylbenzene
Acetaldehyde	1.08E-04	4.72E-04	1.08E-04	4.72E-04	1.08E-04	4.72E-04	1.49E-04	6.51E-04	4.72E-04	0.00	Acetaldehyde

Appendix B

Williams Gas Pipeline, Northwest Pipeline Corp.
Caldwell Compressor Station

AIRS Data Form

AIRS/AFS FACILITY-WIDE CLASSIFICATION DATA ENTRY FORM

AIR PROGRAM	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
POLLUTANT							
SO ₂	B						U
NO _x	A	A				A	U
CO	B						U
PM ₁₀	B						U
PT (Particulate)	B						U
VOC	A					A	U
THAP (Total HAPs)	B						U
			APPLICABLE SUBPART				

- ^A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 ton-per-year (T/yr) threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- ^B = Actual and potential emissions below all applicable major source thresholds.
- ^C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).
- ^{NA} = Not applicable as defined in IDAPA 58.01.01.579, constructed prior to baseline dates.